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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/561,976	05/22/2006	Youngchul Park	33082M295	1618

441 7590 11/06/2008  
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WASHINGTON, DC 20036

EXAMINER
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ADAMS, BRET W

ART UNIT	PAPER NUMBER
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2862

MAIL DATE	DELIVERY MODE
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11/06/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/561,976	PARK ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	BRET ADAMS	2862	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 October 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,6,7,9,21 and 22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,6,7,9,21 and 22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

***Response to Arguments***

1. Applicant's arguments with respect to claims 1, 6-7, 9, and 21-22 have been considered but are moot in view of the new ground(s) of rejection.

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Wang (US 2002/0069025).

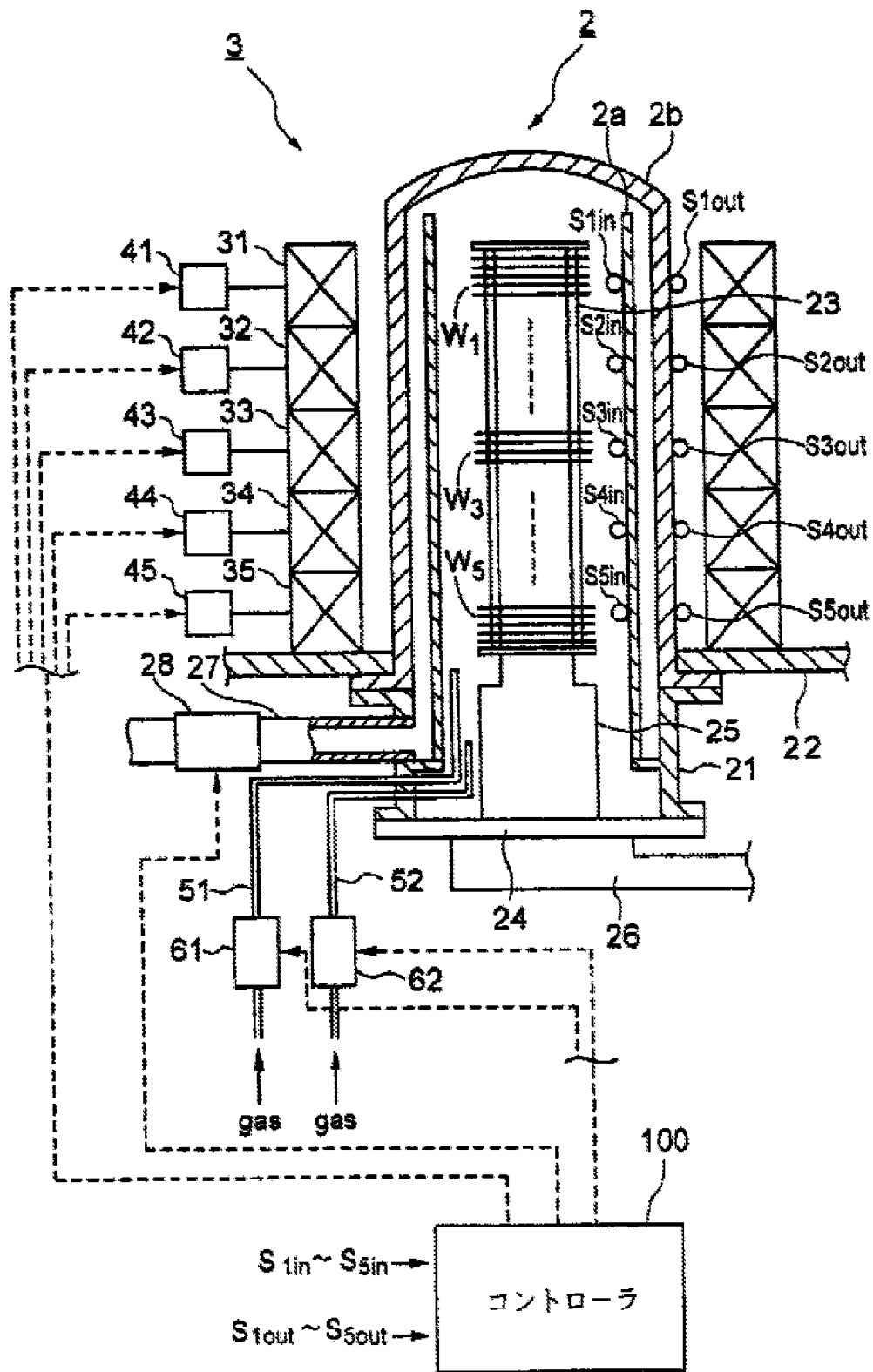


FIG. 1

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4. Regarding claims 1, Wang discloses a calibrating method for a heat treatment apparatus that includes a processing vessel (**2, see Fig 1 of Wang reproduced above**) for accommodating process objects (**W<sub>1</sub>-W<sub>5</sub>**) therein, a plurality of heaters (**31-35**) and a plurality of temperature sensors (**S<sub>1in</sub>-S<sub>5in</sub> and S<sub>1out</sub>-S<sub>5out</sub>**); that stores (**in estimator 110**) a thermal model (**paragraph [0047-48] and [0056-57]**), for estimating temperature of the process objects in the processing vessel based on outputs of the temperature sensors; that estimates the temperature of the process objects in the processing vessel based on the outputs of the temperature sensors by using the thermal model (**[0040]**); and that controls the heaters based on the estimated temperature (**[0070]**), to perform a heat treatment to the process objects, said method comprising the steps of: driving the heaters to heat an interior of the processing vessel (**[0070]**); measuring temperature in the processing vessel (**[0034]**); and calibrating the thermal model by adding or subtracting a correction value (**OF1-OF5**) to the estimated temperature so that an the estimated value of the temperature substantially coincides with the actual measurement value of the temperature, upon comparison of the measured temperature in the processing vessel with temperature of the process objects estimated by using the thermal model (**[0041]**), wherein: the thermal model has a function of estimating temperature of one of the heaters and temperatures of the temperature sensors (**S<sub>1out</sub>-S<sub>5out</sub> measure temperature between outside of vessel 2 and heaters 31-35**); and the calibrating step includes the steps of: determining a relationship between an amount of change in the temperature of said one of the heaters and amounts of change in the measured temperatures of the temperature

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sensors ([0074], where actual temperatures are measured by monitor wafers W1-W5, and compared to temperature sensor outputs from S1<sub>out</sub>-S5<sub>out</sub>);

determining a difference between an estimated temperature of one of the temperature sensors located closest to the said one of the heaters, as estimated by using the thermal model, and an actual temperature of said one of the temperature sensors measured by the same ([0074]); and

calculating a correction value based on the relationship and the difference wherein the correction value is to be applied to the temperature model such that the estimated temperature of the said one of the heaters, as estimated by the thermal model, substantially coincides with the actual measurement value of the temperature, and thereby adapts the thermal model to the heat treatment apparatus; is corrected by using the correction value ([0041]).

5. Regarding claim 9, Wang inherently discloses the claimed apparatus limitations by virtue of the method discussed above with respect to claim 1.

#### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 6-7, 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang (US 2002/0069025) in view of Muka (US 6193506).

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8. Regarding claims 6 and 7, Wang discloses the calibrating method discussed above with respect to claims 1 and 9. Wang does not explicitly disclose that the method wherein the plurality of heaters includes first and second (or inside) heaters arranged above and below the process object, nor that the thermal model has a function of estimating the temperatures of these first and second, or inside, heaters. Muka teaches arranging heaters (28) in several locations within ("inside) the processing vessel, including both above and below the processing objects. It would have been obvious for a person of ordinary skill in the art at the time of the invention to combine the external (to the vessel) heating system of Wang with the internal heaters of Muka, because doing so would provide predictable results of precisely-controllable vessel and process object temperature by minimizing thermal gradient above and below the processing objects within the vessel. Additionally, the monitor wafers ( $W_1$  and  $W_5$ ) of Wang are already in position to measure temperatures of the heaters of Muka and as such will be used in the calibration method already described above. In this way the elements of Wang and Muka retain their original function when used together.

9. Regarding claims 21-22, Wang and Muka inherently disclose the claimed apparatus limitations by virtue of the method discussed above with respect to claims 6 and 7.

### ***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRET ADAMS whose telephone number is (571)270-5028. The examiner can normally be reached on M-F 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Assouad can be reached on (571)272-2210. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BRET ADAMS/  
Examiner, Art Unit 2862

/Patrick J Assouad/  
Supervisory Patent Examiner, Art Unit 2862